EXTRACTION OF VOLATILE OIL FROM GINGER (*Zingiber officinale* Roscoe)

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ABSTRACT

Ginger (*Zingiber officinale* Roscoe) is well known as a spice which has been used over 2000 year ago. It can be found in tropical region such as Malaysia, Indonesia and Thailand. Ginger has highly used in the worldwide as a spice, herbal remedy, and flavoring agent etc. This final year project is about the Extraction of Volatile Oil from ginger (*Zingiber officinale* Roscoe) that is obtained from Malaysia local market. Hydrodistillation process was conducted in order to extract the essential oil from the rhizome ginger. It was separate using hexane and chloroform in order to determine the desire compound at different polarity of solvent. The major compound that will present in the essential oil of ginger is depending on the extraction time of plant studied. The percent yield obtained from hexane extract for two hour and four hour of extraction was 0.1059% and 0.1663%. Meanwhile, the percent yield from choloroform extract for two hour and four hour of extraction was 0.0591% and 0.1358%. GC-MS analysis was used in order to determine desire compound in the ginger oil. Seven chemical compounds was founds on chloroform extract at two and four hour of extraction time which is 2-hydroxycineol (2 hr : 71.6%), 8-hydroxyneomenthol (2 hr : 31.3%), oleic acid (2 hr : 29.8%), 3-deoxyestradiol (2 hr : 56.8%) and 6-(1-hydroxy-1-methylethyl)-3-methyl-2-cyclohexenol (4 hr : 26.0%), adipic acid, bis(2-ethylhexyl) ester (4 hr : 20.8%) and 2-methylenecholestan-3-ol (4 hr : 22.5%), respectively. Meanwhile, nine chemical compounds was found on hexane extract at two and four hour of extraction time, β-Linalool (2 hr : 70.2% ; 4 hr : 61.7%), α-terpineol (2 hr : 58.3%), β-citral (2 hr

: 72.6% ; 4 hr : 46.1%), α-citral (2 hr : 73.8%), α-curcumene (2 hr : 87.2% ; 4 hr : 76.6%), zingiberenol (2 hr : 56.2%) and 6-methyl-5-heptene-2-one (4 hr : 77.3%), nerolidol (4 hr : 45.2%), retinoic acid, methyl ester (4 hr : 52.9%). Nine compounds, 2-hydroxycineol, 8-hydroxyneomenthol, oleic acid, 3-deoxyestradiol 6-(1-hydroxy-1-methylethyl)-3-methyl-2-cyclohexenol, adipic acid, bis(2-ethylhexyl) ester and 6-methyl-5-heptene-2-one and retinoic acid, methyl ester was reported for a first time in Zingiberaceae family while 2-methylenecholestan-3-ol was first time found in this species.

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